

Applicant : Anthony Mazarakis
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Examiner: Suhan Ni

Amendments to the Claims:

1. (Amended) A thin diaphragm electroacoustic transducer having [of] at least two elongated [two (binary)] interlaced coils [coil electroacoustic transducer] for use as loudspeaker, characterized by including a field replaceable sound emitting diaphragm that can be replaced without [the need] needing to manipulate wires, the electroacoustic transducer [and] comprising:

a) [A] a magnetic system [which comprises] comprising an upper plate pole, [1 the] two side poles, a [4 the] central pole [3] and [the] a row of Neodymium magnet bars, wherein two [5. Two] air gaps [22] are formed between the upper plate pole and the central pole[. The] and magnetic lines transversing the gap[,] create a high density field[.]

b) [A] a thin foil diaphragm carrying at least two thin aluminum conductors [formatting] forming at least one binary interlaced coil, [11 and 12,] the two thin aluminum conductors being built the one into each other, and [which are] being situated substantially in the plane of the magnetic lines transversing the air gaps, wherein [gap 22 and] the conductors of the diaphragm, [being] when crossed by the same intensity of flux lines perpendicularly, at the totality of their length, are subject to the same force F upon [where,] the application of $F=Bli$; and [gives the same force F.]

c) [A] a diaphragm sound emitting assembly[, 2] comprising a frame made of non-ferrous sheet metal, on which is tensioned a vibratable [very] thin diaphragm [2A] comprising a [of] high temperature polymer on which are formed [formatted a multiplicity of] two elongated coils [11 and 12] of aluminum foil, the elongated coils being [which are] identical, [and] symmetrical, and interlaced the one into the other.

2. (Amended) [A] The thin diaphragm electroacoustic transducer as claimed in claim 1, wherein [in which] the [said] diaphragm comprises [is carrying] a double coil [2A] configuration, is adhered along the periphery of the frame, and the elongated conductors of the two coils are terminated in two aluminium foil conducting islands, [9-9A and 10-10A] each oof which are symmetrically located at [the] extremities of the [said] diaphragm assembly [2].

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3. (Amended) **[A diaphragmatic]** The thin diaphragm electroacoustic transducer as claimed in claim 2, wherein **[in which]** the **[said]** conducting islands, when the diaphragm assembly **[2]** is properly inserted inside the transducer, are situated in **[the]** a sliding routing or path of a pair of contacts **[13B and 13C]** which are spring loaded, and supported on **[the]** a pair of sliding covers, whereby **[thus]** at the end of the sliding route of each cover, two spring loaded contacts are pressed against the two **[mating]** conducting islands **[9-9A and 10-10A]**.

4. (Amended) **[A diaphragmatic]** The thin diaphragm electroacoustic transducer as claimed in claim 3, wherein the **[in which]** spring loaded contacts **[13B and 13C]** are gold plated at their tip and soldered on the sliding cross shaped contact carrier **[13]**, the contact carrier being **[which is]** made of copper laminated Bakelite sheet.

5. (Amended) **[A diaphragmatic]** The thin diaphragm electroacoustic transducer as claimed in claim 4, wherein **[in which]** the copper laminated sheet is separated in two conducting surfaces, and one contact is placed on **[13A one for]** each contact. The one end of the cross, shaped contact carrier **13**, are soldered two flexible conductors of which their other end are soldered on the riveting member of the loudspeaker terminal.

6. (Amended) **[A diaphragmatic]** The thin diaphragm electroacoustic transducer as claimed in claim 5, wherein **[in which]** when the diaphragm assembly **[2]** is **[to be]** replaced[,]
by removing the two transducer covers **[8]**, the diaphragm assembly is free to be withdrawn.

7. (Amended) **[A diaphragmatic]** The thin diaphragm electroacoustic transducer as claimed in claim 6, wherein when **[in which]** the new diaphragm **[2]** is inserted, **[and]** the connecting of the two coils **[11 and 12]** with the corresponding terminals **[16,]** is accomplished **[simply]** by reclosing the transducer's upper and lower covers, whereby the **[. This]** reclosing

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action [, by the covers 8, automatically] terminates the one coil on the upper terminals and the other coil on the lower terminals [16].

8. (Amended) [A diaphragmatic] The thin diaphragm electroacoustic transducer as claimed in claim 7, wherein [in which the replaceable diaphragm and frame integral unit 2, provides another advantage, which relates with the percentage of its area being actively driven by the audio signal. The] two semicircular sections of the coils are free to vibrate, [and] [the] an audio current flowing in the [that] semicircular section of each coil is actively contributing in the sound producing process[, in the same procedure as the linear sections of the coil, [thus substantially] thereby increasing the transducer efficiency.

9. (Amended) [A diaphragmatic] The thin diaphragm electroacoustic transducer as claimed in claim 8, wherein [in which the] a central pole [3] profile cut[, has a shape comprising two outer edges bounding an inner region [, which resembles a dry river 23 with its two banks 21,] and reduces the number of useful magnetic lines crossing the center part of the diaphragm which is empty of conductors[. The] and one or more reduced lines [from departing the bed of the river,] emanating from the inner region are added to those crossing [usefully the] an active gap [22] area and crossing the coils' conductors.

10. (Amended) [A diaphragmatic] The thin diaphragm electroacoustic transducer as claimed in claim 9, wherein [in which the] a shape of the central pole, where its upper part groove[, serves also the purpose of accepting] is configured to accept an elongated soft material that overflows the groove which acts as bumper for the diaphragm[, during high amplitude excursions.

11. (Amended) [A diaphragmatic] The thin diaphragm electroacoustic transducer as claimed in claim [10] 1, wherein [in which] the [binary] interlaced coils [11-12] of its diaphragm[, can be utilized in one or more [a number of] modes, the one or modes comprising

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[by those skilled in the art of sound reproduction:] a) In series connection for increased sensitivity, b) in parallel connection for increased electrical power handling ability, c) [furthermore] for [developing such applications] as a crossover in two different frequencies, d) as a DDL Direct Digital Loudspeaker, e) as a feedback optimizer circuitry, f) as a magnetic damping circuitry, and h) in a two winding push-pull configuration[, h) other inventive applications].